This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1 – 14 (Cancelled)

15. (Currently Amended) A storage apparatus comprising:

a storage medium having at least one storage area, the storage area being in one of a plurality of states to represent the information stored in that storage area;

at least one electron emission device to generate an electron beam current utilized to read and write the information stored in the storage areas, the electron emission device comprising:

an emitter electrode;

an extractor electrode; and

a solid-state field controlled emitter comprising ~~having~~ a Schottky metal layer formed on the emitter electrode and a semiconductor layer formed on the Schottky metal layer, the Schottky metal layer and the semiconductor layer forming a Schottky metal-semiconductor junction fabricated on the emitter electrode for enhancing electron emission of the emitter electrode and electrically coupled to the extractor electrode such that an electric potential placed between the emitter electrode and the extractor electrode results in field emission of electrons from an exposed surface of the semiconductor layer of the Schottky metal-semiconductor junction.

16. (Original) The storage apparatus according to claim 15 wherein the electron emission device further comprises a focusing electrode electrically coupled to the solid-state field controlled emitter.

17. (Original) The storage apparatus according to claim 15 wherein the solid-state field controlled emitter utilized Pt as the Schottky metal.

18. (Original) The storage apparatus according to claim 15 wherein the solid-state field controlled emitter utilized TiO_2 as the semiconductor.

19. (Original) The storage apparatus according to claim 15 wherein the electron emission device further comprises a dielectric placed between the emitter electrode and the extracting electrode.

20. (Original) The storage apparatus device according to claim 16 wherein the electron emission device further comprises a second dielectric placed between the extracting electrode and the focusing electrode.

21. (Original) The storage apparatus according to claim 15 wherein the solid-state field controlled emitter is a flat emitter.

22. (Original) The storage apparatus according to claim 15 wherein the solid-state field controlled emitter conforms to a tip-based geometry.

23. (Original) The storage apparatus according to claim 15 wherein the electron emission device further comprises means of addressing said electron beams to storage areas on the storage medium by a motion relative to one another.

24. (Original) The storage apparatus according to claim 15 wherein the electron emission device further comprises means for addressing the electron beams to storage areas on the storage medium by beam steering.

25. (withdrawn) A method of improving electron emission under partial vacuum within a solid-state field controlled emitter, comprising:

forming a junction between a high-electrical conductivity material and a low electron affinity material;

injecting electrons across the junction from the high-electrical conductivity material to the low electron affinity material;

applying an electric field across the junction sufficient enough to induce electron emission from the low electron affinity material through the partial vacuum to an information storage location within the high-density information storage device to perform a read or write operation.

26. (Withdrawn) A method of improving electron emission as claimed in claim 25 also comprising forming the high-electrical conductivity material on an emitter electrode.

27. (Withdrawn) A method of improving electron emission as claimed in claim 25 also comprising forming an extractor electrode proximate the low electron affinity material, the extractor electrode utilized to apply the electric field.